

4-21-1960

## The Amplifier - v. 6, no. 12

Associated Students of the Montana School of Mines

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# The Montana School of Mines AMPLIFIER

Volume 6, No. 12

PUBLISHED BY THE ASSOCIATED STUDENTS OF THE MONTANA SCHOOL OF MINES

April 21, 1960

## Dr. Underwood To Speak Here

### New Faces on Hall Council

Two freshmen, James A. Mazza of Chicopee, Mass., and Raymond Kotow of Crossfield, Alberta, Canada, were elected to serve on the hall council. They were chosen to replace Dan Rovig and Bob Applegate as members of the hall council after many hours of consultation between the members of the council.

After a few attempts, the hall council received the right to appoint a student to the faculty discipline committee. Don Roberts was the final choice of the hall council to this position. Don is a non-voting representative of the students, from the dormitory, on the discipline committee.

Now that the council has two new members, and a student on the discipline committee, the hall council should be maintaining a high degree of efficiency, as representatives of the students in the residence hall.

### Geologists Go Underground

Dr. Earll's mining geologists started their underground studies before the Easter holidays by taking trips to the Badger and Steward mines to learn sampling procedures.

During the course a total of five underground tours will be made to study the various aspects of mining geology, geological mapping procedures, and mine sampling.

Today the second trip of the course will be made to the Badger and Steward mines to study mining geology techniques. This trip will be followed later in the semester by several geologic mapping trips during which portions of the Steward and Badger mines will be mapped.

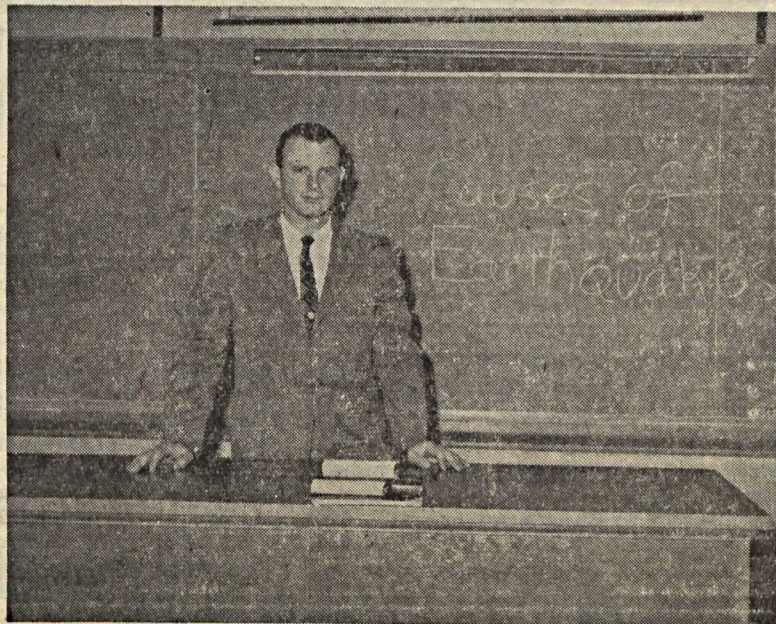
Students participating in this course are J. Chelini, S. Denhartog, K. Erickson, K. Fox, J. Kirchner, A. Lindquist, D. Rasmussen, and R. Utter.

Geology Department professors assisting in this course are Mr. W. E. Cox and Mr. W. B. Hall.

### Sigma Rho Plans Picnic

On April 6 the Sigma Rho held a meeting for the purpose of electing delegates for the student council. A campaign committee was also appointed. Plans for a picnic were discussed and then a committee was chosen for the purpose of carrying out the plans.

### Geology Department Seminar



Mr. F. N. Ramseier, a graduate student in Geology, recently gave an interesting seminar entitled "The Causes of Earthquakes." Mr. Ramseier discussed several of the modern theories of earthquake causes and their relationship to present earthquake areas.

### Interview Schedule for April, 1960:

April 26, 27—Anaconda Company (Salt Lake City, Utah) Interviewer: Mr. John F. Dugan, Representative; Prof. Vine, in charge of interview; 208-B, Eng. Bldg.

All interested juniors, seniors, and graduates. This interview will complete the interview schedule for the year 1959-60.

### Magma Goes To Press

Everyone can relax now—that is—everyone who has been working on the MAGMA Staff for the past month. The first draft has been sent to the printers, and only the proofreading and a few minor adjustments remain.

The MAGMA Staff has put every effort toward the book to make it a success. Close cooperation between staff members and the advisors was ever-present during the work, and contributed heavily toward the completion of the MAGMA.

Low Fischer, editor, headed the staff, with John Bennett serving as assistant editor and John Ruffatto, business manager. Considerable art work for the MAGMA was done by Werner Raab and Jean Sigurdson. The remaining part of the staff consisted of fifteen students who were assigned to various sections of the MAGMA.

This year's MAGMA will be bound with a padded leather cover, picturing a prospector panning gold along a stream. It also contains colorful division pages that separate the various sections.

Although student cooperation with the MAGMA Staff was very

### Prof. McCaslin Scholar-shipped

John G. McCaslin, assistant professor of physics at Montana School of Mines, has been awarded a month-long scholarship at Rennselaer Polytechnic Institute, Troy, New York.

He will attend a summer institute on analog and digital computers which will begin on June 19th and conclude on July 15th.

Professor McCaslin will be one of a class of twenty to attend the institute from colleges across the United States.

The course will consist not only of the theory of computers but will involve actual experience in solving problems with the computers.

good, many students failed to have their pictures taken. It is hoped that a larger percentage of students will have their pictures taken next year.

Students are urged to refrain from crowding the publications room to catch a glimpse of the first draft of the MAGMA. A notice will be issued the moment the MAGMA arrives on the Campus. A time schedule will be set up so that all students may fulfill their desires to look at the MAGMA.

Dr. Arthur L. Underwood, Jr., Associate Professor of Chemistry at Emory University, Georgia, will speak at Montana School of Mines on "Infrared Spectrophotometry of Inorganic Anions" on Monday, April 25 at 7:30 p.m. in room 216 Metallurgy Building.

He was born in Rochester, New York in 1924, and attended the Rochester public schools. He graduated from the University of Rochester with a B. S. degree in chemistry in 1944, and then served in the U.S. Navy for 2 years. In 1946, he returned to the University of Rochester as a Research Associate on the Atomic Energy Project, and began working toward the Ph. D. degree in biochemistry. During this period, Underwood also worked on analytical problems encountered in studies of the toxicology of beryllium. He received the

Ph. D. in 1951. In 1948, Underwood married Elizabeth Emery, a fellow graduate student at Rochester, and they now have 3 children.

In 1952, Underwood did postdoctoral work in analytical chemistry at MIT. He then joined the Department of Chemistry at Emory University, where he now holds the rank of Associate Professor. He is currently on sabbatical leave from Emory working with W. D. Cooke at Cornell University.

Dr. Underwood has published a series of papers in analytical journals including work on photometric titrations with EDTA, titrations of metal chelate compounds in non-aqueous solvents, and infrared spectrophotometry of inorganic ions. He is the co-author of a recent test and laboratory manual in quantitative analysis. He belongs to the American Chemical Society, the American Association for the Advancement of Science, the American Association of University Professors, and the Society of the Sigma Xi.

Infrared spectrophotometry has been largely neglected by analytical chemists in dealing with inorganic systems. The alkali halide pressed disk technique makes possible the development of infrared methods for a large variety of inorganic substances, and its applicability is readily extended to samples presented as aqueous solutions by combining it with lyophilization (freeze-drying). The freeze-drying in turn, provides a good way of handling column elutriates, and thus preliminary chromatographic separation and concentration steps can be combined with infrared spectrophotometry for handling a variety of inorganic samples. Since most of the modern optical and electrochemical techniques provide improved methods for determining metallic elements, it is interesting that the infrared approach seems most useful in determining anions.

The infrared spectra of a number of inorganic anions, alone and in mixtures, are shown and discussed in this lecture, and the techniques are described by which the spectra are obtained. Applications of these methods to practical analytical problems are then considered. The infrared determination of nitrate, nitrite, and sulfate in water samples following an ion exchange separation serves as a good example of what can be done. The determination of traces of contaminant anions in reagent chemical is another example. Finally, the infrared examination of analytical precipitates for coprecipitated anions is an outstanding application.

Of the various instrumental methods that can be used to find the equivalence points of titrations, photometric ones are perhaps the most obvious, because ordinary visual titrations with colored indicators are in a sense photometric. By replacing white light with monochromatic light and the human eye with a photoelectric detector, we often obtain advantages in

(Continued on page 4)

### Coming Events

#### APRIL—

- 21—Student Wives Bridge, Coed Room, 8:30.
- 23—AAU Weight Lifting Meet, Northwest Division.
- 24—Baseball, Mines at Western.

#### MAY—

- 1—Senior Tea.
- 2—AIME Meeting, Phy-Lect Room, Petroleum Bldg.
- 2—Baseball, Carroll at Mines.
- 2—Faculty Women's Club, Main Hall, 8:00 p.m.



The Amplifier

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EDITORIAL

M-Day has long been a major part of the wonderful tradition of this school. It would be a shame to see it fall on its face this year.

The Copper Guards, the sophomore men's honor organization, has the responsibility of organizing most of the M-Day activities. The record of this organization has been very poor so far this year, however. Their only actions have been in the negative—not lighting the Christmas tree and not lighting the M.

So far, in connection with M-Day, the Copper Guards have not acted in the negative—they just haven't acted at all. There have been no planning meetings, no committees appointed; as far as can be seen, there has been no thought on the matter at all.

When will the Copper Guards stop playing their role at the "tower of inactivity". We hope it's soon—M-Day is.

The students as a whole also share a responsibility in making M-Day a success. This responsibility includes both taking an active part in the activities and exercising a certain degree of sanity and good judgment. Remember the critical burning of one of the Mines students last year by a careless fellow student, and also remember that any property damage will end up being paid for with student funds.

If the Copper Guards get busy, we are assured a successful M-Day this year; if the students exercise some degree of sanity, we are assured the chance to have a successful M-Day in the years to come.

Letter to the Editor . . .

Dear Sir:

Actually, I don't care what happens to or about this whole controversy over physical chemistry, whether or not the editor is Nitor, or what anyone thinks about my letter. Phooey on the whole mess! Also, I actually don't know or care what goes on at Oxford.

Sincerely,  
(Barbarossa)

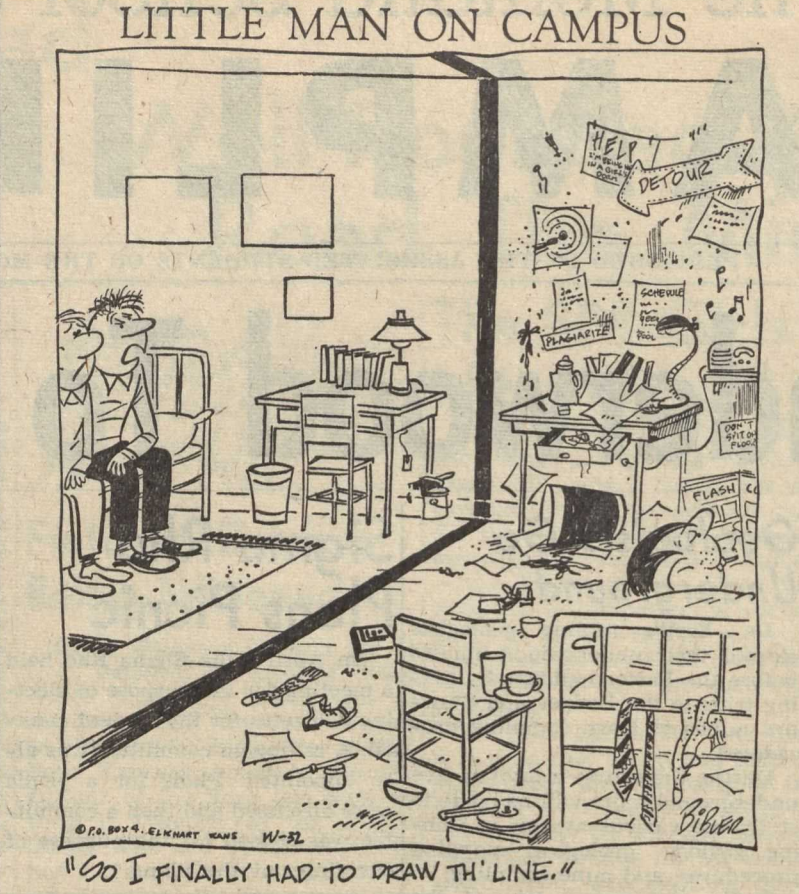
R. Applegate Receives Rotary Club Scholarship

The 1959-60 Butte Rotary Club Scholarship of \$250 has been awarded to Robert L. Applegate, a junior at Montana School of Mines, Butte.

The scholarship is based upon integrity, engineering promise and financial need.

Applegate is the son of George L. Applegate of Deer Lodge; he is majoring in geological engineering at Montana School of Mines.

About all a bald man gets out of a hair cut is fringe benefits.



obsessed with the knowledge that a million copies have been bought of each of the last fourteen records of the hip shaker from Tupelo, Miss. Altogether, Elvis has sold 40 million dollars worth of records. The hopeful all know that you can get into this business with as little as \$200 and a lot of luck.

The most important development in the past ten years, however, has been the demand for the best music played by the world's best musicians. There is hardly a worth-while piece of music unrecorded.

Fifteen years ago only a handful of Bach's works were available on records. Today there are nearly 700 recordings of his works. Bach himself, according to my information, has never heard a complete performance of his monumental two-and-a-half-hour B Minor Mass, but thousands of Americans today play and replay the eight versions on LP records.

Some "intellectuals" may squirm because music is no longer the province of a chosen few; others may mourn because it is listened to in shirt sleeves as well as dress suits. But most music lovers are excited that fine music has become an integral part of American daily living.

Mining Students Survey During Easter Recess

The Montana School of Mines annual Mine Surveying course was held during Easter Vacation. The regular course was scheduled for June, but by choice of the students and with the consent of Professor W. A. Vine of the Mining Dept., it was decided that during vacation would be a more convenient time.

Field surveying began April 11, at the Kelly Mine, on the 600 and 1600 levels. There were four parties with three men on each party. Those students who were participating were Ed Hopwell, Al Winters, Manuel Galup, James Engstrom, Frank Larvie, Peter Atkinson, Bill Standard, Dan Rovig, Bill Thompson, John Dowis, A. I. Martin, and Don Rolfe. The course consisted of computing, mapping and surveying.

Bureau Bulletin Made Available

The Montana Bureau of Mines and Geology announces that its Bulletin 14, Directory of Known Mining Enterprises, 1959, is available from the Bureau without charge.

This annual publication lists 264 metallic and non-metallic mining properties. Listings are made by counties and each contains names of owners and operators, status of the enterprise in 1959, its products and location.

There is included a listing of sixty-seven active coal mines and their operators. These mines are also given by county.

Added to this bulletin is a supplemental statement of mining enterprises which are inactive, dormant or about which information is insufficient to warrant their inclusion in the regular listing.

A section on "The Mineral Industry of Montana in 1959" contains information on production data and describes recent developments in twenty-eight metallic and non-metallic mineral commodities.

Frank H. Crowley prepared the directory; Thomas Morgan, State Coal Mine Inspector for Montana authored the section on coal mines and F. B. Fulkerson and G. A. Kingston of the United States Department of the Interior, Bureau

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Northeast Quarter . . .

By Jack Thomas

Late in September of each year, young people flock to the famous school placed high on the side of an even more famous butte. Some have traveled half way around the world while some have walked only a few blocks, but they all have the same objective to better themselves with higher education. Many are not one full year out high school but feel that they are ready to take their places at MSM as grown and mature individuals and expect to be treated as such. Indeed, it would appear that they are. The young adults are addressed as Mr. and Miss or Mrs. and are told time and time again that as adults they will be treated as such and will be expected to act accordingly.

The first semester opens and the young adults are wide-eyed, working diligently, and completely enjoying their new found adulthood. Instructors tell them that they are completely on their own home work won't be handed in, tests will be announced one week in advance, and the student may come and go as he wishes. The same instructors manage to state in the next sentence that they may give the students a "pop quiz" at anytime, the reason being none other than to make sure the homework is completed on time. The young adults are further informed that they must attend so called orientation lectures in which they are told how to study and how to conduct themselves as young adults. If they do not attend they must go before the Dean who must explain why they must be told things they already know.

The semester progresses until finally the young adults take inventory of the school on the hill and find themselves taking "pop quizzes" and attending orientation classes, both of which have no place in a college curriculum. It is no wonder the young adults' eyes are no longer wide, they never got out of high school.

Theta Tau Holds Regional Concilave

On March 31 four students from the School of Mines left Butte for Rapid City, South Dakota, where they participated in the Regional Convention of Theta Tau. Barry Donaldson, Gay Kravik, Jack Weaver, and Cam Brown acted as delegates from Psi Chapter of the Mines. The South Dakota School of Mines acted as the host for the event.

Among items discussed were plans as to where and when the National Convention will be held. No definite plan, however, was set up. The national representative elected was Robert Pope. Mr. Pope, Grand Scribe, was also guest and the honored chief speaker of the conclave.

The meet was considered a large success by everyone in attendance and a good time was had by all. The Mines representatives returned in time for the Easter recess and stated that they thoroughly enjoyed the convention.

of Mines wrote the section on Montana's Mineral Industry, in 1959. A map showing the distribution of mining districts in Montana is included.

This publication may be secured by writing the Montana Bureau of Mines and Geology, Room 203-B, Main Hall Montana School of Mines, Butte.

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# Mines To Host Sports Carnival

The School of Mines will be host to the Spring Sports Carnival, which includes championships in baseball, track, golf and tennis for the schools in the Montana Intercollegiate Conference. With very limited facilities on the campus the sporting events will be at various locations in the city.

The Baseball tournament will be held at Duggan Memorial Park, which is located across from the Junior High School. The tournament will begin on Friday, May 20, with first round games to be played that morning and afternoon.

The track and field meet will be held Saturday, May 21, on the Junior High Field. Many athletes from the Montana colleges are expected to participate in this competition.

The golf tournament will be held on the links at the Butte Country Club. Each entrant will play 36 holes, 18 to be played on Friday the 20th and 18 on Saturday the 21st.

The tennis tournament will be held at the courts either on Harrison Avenue or at the Excelsior Street courts, or both if necessary, on Saturday, May 21. Drawings and pairings will take place at the courts immediately preceding the matches. Students from the Mines who will participate will be announced later by Coach Ed Simonich.

## Cullen Cuts Baseball Team

Coach Bill Cullen cut the baseball team to twenty-two players at the first of the week. The following boys survived the first drop: Cam Brown, George Bronson, Jim Conway, Dick Crnich, Bob Dickenson, Dick Dwyer, Darwin Ekstrom, Ken Erickson, Pete Cross, Tom Henderson, Dan Jewett, Jim Knuckles, Ray Kotow, Tom Leibsch, Don Mahagin, Bob Laughlin, Frank Quilici, Bill Tamietti, Bill Tiddy, an Trbovich, Donald Hyppa.

This week Coach Bill has the boys drilling hard for a doubleheader in Dillon when the Mines meet Western April 24. If the squad continues to improve, a good showing can be expected.

## Honorable Mention

Coach Ed Simonich recently announced that three of the 1959-60 School of Mines basketball team were named All Conference honorable mention at a meeting last month of the coaches of the Montana Intercollegiate Conference. The three to receive honorable mention were Bill Thompson, junior guard from Everett, Washington, Bob Hauck, freshman forward from Butte, Montana, and Harlan Higinbotham, sophomore guard also from Butte.

## Spring Had Sprung

Easter Monday roll polled those with enough will power to make their 8:00 class. As in most schools there were some who did not even make the campus. Our spring vacation was heaven sent, it seemed that after mid-term exams a rest was well in order. Most Monday scholars had an unusually vacant look on their faces, which leads one to wonder whether it was the grades or the weekend.

One report has it that everyone left in town had to take on an extra load to make up for those who enjoyed their vacation elsewhere. Among the news around campus is a little red bug, which had been kept secret for two months. Now it seems that a certain party has become a VW fan. Oh! well, he always favored those little foreign jobs anyway. The only complaint about this spring vacation is that now we need a week to recuperate. As was stated before, "Spring has Sprung."

Salesman: This model can go 100 miles an hour and can stop on a dime.

Prospect: What happens after that?

Salesman: A little putty knife comes out and scrapes you off the windshield.



Mr. Fran William Hall addresses audience.

## Wildlife Convocation Held

The Museum Hall on March 30 was the scene of a convocation on Puerto Rico, U.S.A., presented by the National Audubon Society. Mr. Fran William Hall presented a lecture, colored film, and recorded sounds of the colorful natural life of Puerto Rico. He is a photographer and naturalist and has worked for the Walt Disney studios specializing in close-up photography.

The program consisted of two films and a recording of some of the creatures of the Puerto Rico nights. The first film showed some of the birds, bugs, and insects that inhabit that colorful island. The second was of some of the unusually beautiful underwater life surrounding the island.

## Baseball Teams Play Intersquad Game

The Mines baseball team mentored by Coach Bill Cullen is shaping up nicely following daily drills on Leonard field. The team is aiming for its first games in Dillon at 1:00 and 3:00 p.m., Sunday, April 24 against Western. In an intersquad practice game played Friday, April 8, the team captained by Ken Erickson defeated the team captained by Dan Trbovich by a score of 7-0. The practice game proved valuable to coach Cullen in attempting to mold the best possible starting roster into a well rounded team. During the game, big bats were carried to the plate by Ekstrom, Crnich, Liebsh, Laughlin, and Erickson, who all hit the long ball. Consistency was shown by most hitters as pitchers worked cautiously developing their control. Defensively showed Quilici, Trbovich, Conway, Bronson and Mahagin all turn in fine plays. Strong and accurate arms from the outfield were shown by Dwyer, Crnich and Dickenson. Mound duties were shared by Ekstrom, Erickson and Jewett, who combined to turn in the shutout. The loss was attributed to hits collected off Laughlin, Crnich and Henderson. Actually, all participants showed well, and should provide for a strong team and capable bench.

## Track and Tennis Competition Slated

The Montana School of Mines track and tennis teams are slated to open their season on May 7, where they will compete in the Montana State College Invitational track meet and tennis matches, which will be held at the State College in Bozeman, Montana. As of yet no team is posted, but Coach Simonich is planning on entering six or eight men in the track and field meet and two in the tennis meet.

The following weekend the track and tennis teams will travel to Dillon to compete in the N.A.I.A. District Track and Tennis Meet. This meet is scheduled for Saturday, May 14.

Then on May 21 the two teams will compete in the annual Spring Sports Carnival, which will decide the Montana Intercollegiate Conference Champions in baseball, track, tennis nad golf, to be held in Butte on May 20 and 21. This carnival will end athletic events for the schools of the conference for this academic year.

## Tennis Team to Open May 7

This year Mines tennis team is composed of Manuel Munoz from Antofagasta, Chile, and Bill Thompson from Everett, Washington. A 4-game schedule will be played with an additional pre-season game at Bozeman next month.

The 4-game schedule will include the Montana State College Invitational Tournament in Bozeman on May 7. Followed by the N.A.I.A. Championships to be held in Dillon on May 14. May 21 will see the team at home to play in the Montana College Conference meet. To conclude the tennis program, the team will travel to Bozeman to compete in the Montana University Invitational Tennis Tournament on May 28 and 29.

Last year, the Mines team was composed of Manuel Munoz and Johannes Dreyer, who combined to win the doubles in the N.A.I.A. Tournament played at Dillon on May 21, 1959. Munoz was also the singles champion.

## Mines To Host State Weight Lifting Tourney

The Silver Bow County Recreation Board, Butte Miner's Union Youth Center, with cooperation of the Montana School of Mines, will sponsor the 1960 Montana AAU weight lifting championships in the School of Mines gymnasium on Saturday, May 7.

Weigh-ins for 123, 132, 148 and 165-pound classes will be from 10:30 a.m. to noon. Lifting in these classes will start at 2 p.m. Weigh-ins for the 181, 198 and heavy-weight classes will be from 4 to 5 p.m. Lifting in these heavier classes will start at 7 p.m.

All entrants must have an official AAU card. These cards may be secured during the weigh-ins for \$1. All entries must be received by the meet director not later than Monday, May 2. No entries will be accepted after that date. Sam Atiyeh is in charge of arrangements.

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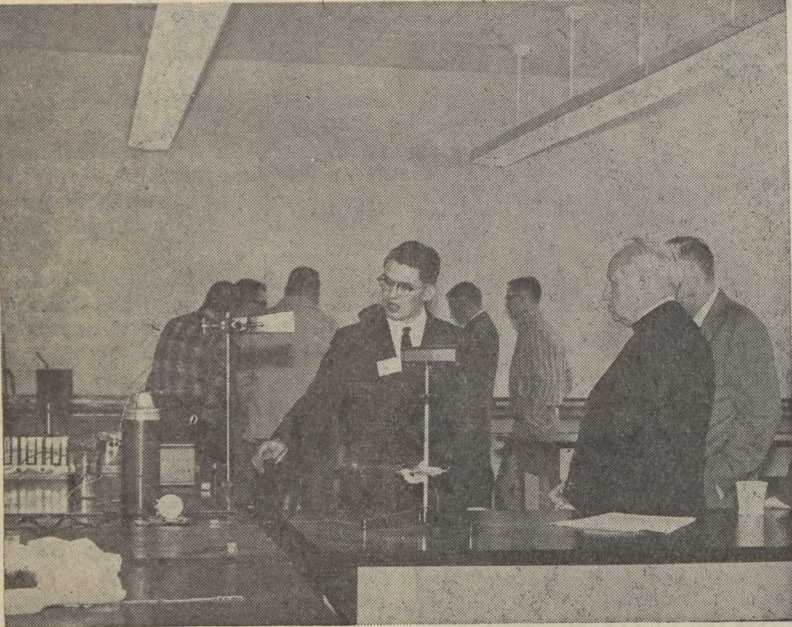
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E-Day Scenes



Joe Keane explaining thermopile to one of the judges, Msgr. Riley.



Henry Thompson explains chemistry phenomenon to Dad, Mom and kids.

In a western cowtown, an old gentleman was walking by a saloon when, without warning, a young cowhand dashed out, took a flying leap from the sidewalk, and landed on the seat of his pants in the gutter.

The man hurried over to the cowboy and asked, "Are you hurt?"

"No," was the reply, "but I'd shore like to meet the so-and-so who moved my horse."

"Dad, I've got a part in the class play," said the high school boy. "I play the part of a man who has been married for 20 years."

"Well son, that's fine," replied the father. "Keep trying and one of these days you'll get a speaking part."

Voter to persistent candidate: Why, I wouldn't vote for you if you were St. Peter himself.

Candidate: If I were St. Peter, you would not be in my district.

Some gals don't seem to want to marry the go-getters; seems they are looking for the already gotters.

"I'd move heaven and earth to be able to break 100," sighed the new golfer.

"Try heaven," advised his caddy. "You've already moved enough earth."

Question of the hour: Will scientists ever find a way to protect a man against a hydrogen blonde attack?

E-Day Big Hit

The third annual Engineering Days was considered a big success. Several hundred people visited the school on Saturday and Sunday, April 2 and 3.

The Mineral Collection in the Library Building, as always attracted a very large crowd. Everyone seemed impressed with the beauty of the mineral specimens. People were fascinated by the complex scientific methods that were shown. They commented that every department had something different and very interesting, and then they wished they had come earlier so they could have seen everything more completely. Many were heard to comment that the E-Day exhibits this year were very extraordinary. The townspeople were also very interested in the movies that were shown in the different departments.

After all the exhibits were carefully judged, the Metallurgy Department came out on top with the first award of \$30 followed by the second award of \$15 which was given to the Physics Department and the Earthquake Display which tied for second place. These awards were made available by the Anderson-Carlisle Society.

All students and faculty who took part in presenting these annual Engineering Days should be congratulated. It took many hours of work to prepare the apparatus this year, because of the greater amount of equipment and techniques that were shown. The students can surely be proud of their scientific ability which they exhibited during the two engineering days.

**DR. UNDERWOOD—**  
(Continued on page 1)

terms of accuracy, selectivity, and general flexibility. Although photometric titrations are not employed nearly to the extent that they might be, enough work has been done to make it clear that they should take their place alongside potentiometric and instrumental titrations.

It is easy to adapt existing filter photometers and spectrophotometers to perform simple, manual photometric titrations, and even the instrumentation for automatic operation is relatively uncomplicated. Likewise, the theory of photometric titrations is fairly simple. From the absorptivities of the titration reactants and products, the Beer-Lambert Law, and the appropriate equilibrium constants, one can easily calculate theoretical titration curves. The shapes vary with the absorption properties of reactants and products at the wave lengths used, but typically the curves consist of linear portions intersecting at the end points. Since reasonable extrapolation is permissible, often only a few experimental points are needed to complete a titration.

Acid-base, redox, precipitation, and complex-formation titrations have all been performed photometrically, with excellent results in many cases. Sometimes it is possible to obtain consecutive end points, determining more than one reactant in a single titration. Although photometric titrations are obviously most important where other means of end point detection weaken or fail. Examples of such cases are certain titrations of metal ions with EDTA and certain titrations in nonaqueous solvents.

Nuts 'n Bolts

by Jack Bennett

FUTURE FUNCTIONS OF THE MINING ENGINEER

At the February conventions of the AIME in New York, suggestions were made as to how the education of the Mining Engineer could be improved. It was the general opinion of educators and leaders in the mining industries that the role of the Mining Engineer is changing.

Charles Brinckerhoff, President of the Anaconda Co., said: "The need for the old concept of the mining engineer, trained broadly in many fields, has greatly decreased, and in his place we need engineers with more training, capable either of specializing, or of eventually developing into administrative work in any branch of the extractive industries." He further suggested that the engineer be given a three-year course of three semesters each year of the principles of engineering and a certain number of electives pertaining to the general field of the minerals industry. These three years would then be followed by specialized training in the field of his choice for another two years.

Among numerous other suggestions were those made by S. D. Michaelson. He held that less emphasis should be placed upon surveying, sampling, and mine layout, because most of this type of work is being done by sub-professional men. He suggested that the courses be revised to include principles of long range planning, budgeting, system analysis and administration, cost control, wage administration, and force control techniques.

Roger Pierce, consultant of Salt Lake City, further suggested that the schools of the Northwest be consolidated into one strategically located institution, possibly in the Butte area. This would enable the school to be located in an area of extensive and varying types of mining that would enable the student to get some first-hand experience. It would also provide for a better financed and equipped institution.

The results of this discussion provided no action, but it is evident that there is need of some type of change in our present educational curriculum with a definite trend toward economics and business administration.



Quake people; Mr. Hall, Poad, Byrne, Dr. Nile, Watkins, Hannah

(Continued from page 1)

**3 MINERS—** tecture, biochemistry, civil engineering, electronics and radio engineering, geology, geographical engineering, general science, industrial engineering, industrial management, library sciences, mechanical sciences, metallurgy, mining engineering, petroleum engineering, process engineering, radio technician, soil fertility, and tool engineering.

A nuclear physicist was optimistic after having a talk with his eight-year-old son. In fact, his colleague in the laboratory remarked about his cheerfulness.

"I am cheerful," replied the physicist. "My boy is going to follow in his dad's footsteps. He has the same strong urge I had when I was his age."

"Do you mean he likes science?"

"I don't know about that," said the physicist, "but he wants to blow up his school."

Waitress: "We have practically everything on the menu."

Patron: "So I see. Can you bring me a clean one?"

What the average man wants out of his new car is his teen-age son.

A beatnik lived in a room with just a bed and chair. One night a fellow beatnik happened in and saw two magazines lying on the floor.

"What didja do, man," he asked, "hire a decorator?"

Overheard in a Hollywood night club: "You and your suicide attempts—did you see last month's gas bill?"

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